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DISEASES OF THE NERVOUS SYSTEM

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

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DISEASES of the NERVOUS SYSTEM

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

How Long Was Roosevelt Ill Before His Death?

W. G. ELIASBERG, M.D.
New York, New York

The answer to this question will be a source of speculation for historians, statesmen, the public and medical men. Should Roosevelt have retired before Yalta? What turn would events have taken if Roosevelt had retired in 1944? Did Stalin and Churchill take advantage of Roosevelt's condition? Would Roosevelt be alive today had he retired in 1943? As physicians we will not attempt to supply a program of policy, rather we have to limit ourselves to the medical problems involved. These are:

a) Was there a condition that impaired Roosevelt's fitness for service as the Chief Executive?
b) Could this condition have been diagnosed in time?
c) Are there any consequences flowing from the Roosevelt case that may be of use in the treatment of other patients?
d) Can we formulate medical recommendations that would prevent ill-health of leading personalities from remaining unrecognized?

Medical histories of prominent men will offer opportunities to better understand difficult cases. However, we are handicapped by the mistaken reasoning that the health of the very important person should be kept from the public.

Post-mortem diagnoses without examination of the patient himself are not too helpful. The impression may arise that nothing new can be contributed and that the few available facts can at best be reflected only in divergent partisan opinion. What new medically important facts can be offered a considerable time after the occurrence of death? The purpose of the present paper is to direct attention to material which is not new in the literal sense of the word. Quite to the contrary, it is old. The oldest historical interpretation of handwriting is that which the Roman historian Suetonius gave to the handwriting of the Emperor Augustus. But it has not been, and is not being, made use of in similar cases by the profession.

While in a number of neuro-psychiatric diseases, such as progressive paralysis, multiple sclerosis, Parkinson's disease, cyclothymic-depressive states, handwriting samples are used as demonstrative material for diagnosis and progress under treatment, internists and general practitioners do not avail themselves of such material in the case histories of circulatory disorders, pernicious anaemia and others.

The grapho-diagnostic method, like other medical methods, uses signs and symptoms in various ways. There are a limited number of pathognomonic signs, the presence of which allows directly of a diagnosis and only one diagnosis. There are, secondly, semi-pathognomonic signs that point to certain patho-physiological mechanisms occurring in various diseases, and there are, thirdly, pathological signs that can be interpreted only if looked at in the context of an individual's life history. These latter signs may be called developmental or patho-developmental signs. The best result will be achieved if either of the former two and the patho-developmental signs are secured, and if any two or all three point in the same direction.

It is to be noted that most diagnostic signs

in medicine are polyvalent, i.e., while connected with the pathological problem at hand, they allow of more than one diagnosis. The sputum containing TB bacilli is fairly pathognomonic, the Wasserman reaction is not. But even the sputum diagnosis will be considerably refined if we know more about the development of the process, its deviation and the general condition.

It will be shown that in Roosevelt's handwriting stemming from the last stage of his life there are pathognomonic signs that are known in neuro-psychiatry. Watching their first appearance, we may date the beginning of the process; in doing so, we tread on more secure ground, if we first establish general traits in Roosevelt's handwriting.

It is not our aim in this paper to start with character development in early childhood. It is sufficient, if we familiarize ourselves with the general appearance of the handwriting as to regularity, angularity or roundness of connection, pressure-rhythm (between thin strokes and heavy strokes) and the opto-motoric rhythm, which comprises the distance between the words, the relative extension of the upper and lower lengths and the relative accent on the middle part of the writing. (See figure 1, age 19.)

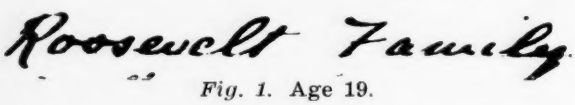

Fig. 1. Age 19.

Fig. 2. Honeymoon Accounting, age 23.

A glance at figure 2 (honeymoon accounting, age 23) is sufficient to show that the opto-motoric, expressive qualities of the handwriting have changed considerably between the ages of 19 and 23. The upper lengths have grown considerably, the lower length has atrophied, but the middle part of the handwriting is preserved. Suffice it to say that in this development, one of the characteristics of Roosevelt's handwriting is reflected. Towards the prime of life, the middle part also becomes atrophic, the connections are more often interrupted. It is the upper length that holds the motoric energy of the writer. (See figures 3, age 46, and 4, age 51.) The handwriting has become "monumental."

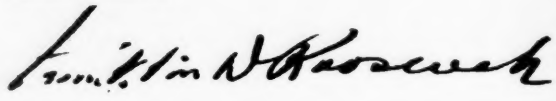

Fig. 3. Age 46.

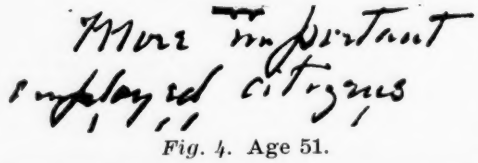

Fig. 4. Age 51.

The psychiatrist, Georg Lomer, in a basic publication, examining samples produced by manic-depressives, established the graphomotoric expression of certain typical emotions, such as anxiety, elation, depression. Thus, Lomer was able to introduce the pathographic method into psychiatry 40 years ago, at a time when the psychology of normality, too, was prepared to study significant pathological cases.

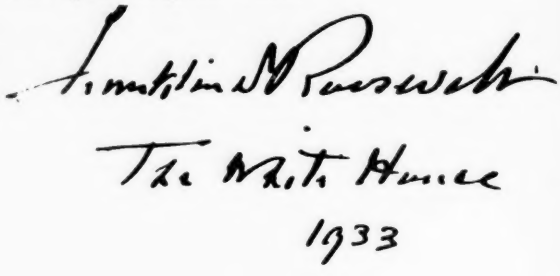

Fig. 5. Age 51.

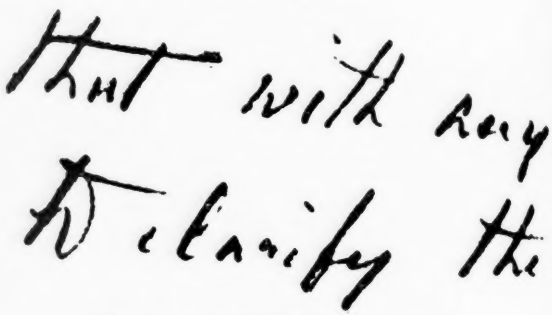

Fig. 6. Age between 32 and 54.

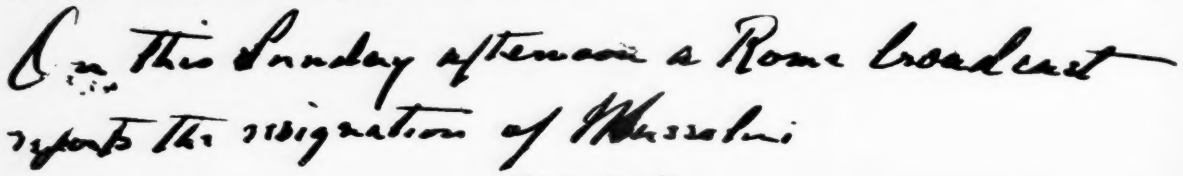

Fig. 7. Age 61.

Without going into further detail, one can say that there occur in Roosevelt's handwriting an increasing number of signs of depression, known from the handwriting of circular depressives. Such depressions are, however, compensated for. The poliomyelitis of 1921 had no influence on this development, which was quite clear before the illness and was not remarkably changed after the illness. The development is at its peak in figure 5, age 51. To illustrate that even better, the signature of the age between 52 and 54 is added (figure 6).

The next specimen of 1943 (figure 7) shows as increased signs of depression dwindling at the end, severe irregularities in pressure, occasional absence of pressure and increased angularity of the handwriting. One might ask whether this depression is still an endogenous one, or the psychological reaction of the personality to organic illness. The answer is: Roosevelt had an unusual ability to pull himself together and cover his depressions, along the lines of the "keep-smiling-code" of our culture. Helpful also were: stamp-collecting, enthusiasm for the sea, love of fishing and cruising, interest in the Navy; these hobbies provided outlets and took his mind off whatever depressions did befall him.

What we see, then, is an alloy of disease and physiological and psychological forces of resistance. As for the physiological forces, we will remember that a) vicarious parts of the brain, and b) vicarious functions of the brain may take over. In the latter way, we get restitution through substitution; to this we may add c) general psychological substitution by the personality as a whole.

The figures 8 and 9 take us into February 1945 (Yalta Conference). The feature that strikes first is the variability in the appearance of the writing, from day to day, and even on the same day. In the two samples, both of March 24th, 1945, the pressure flags, peters out and returns again; the connections are nibbled away. There is an almost complete lack of the former rhythm. It is a pitiful picture of ups and downs in the mental and motor energy. Through the screen of tremors, of changes of direction, of the enormous angularity of the blurring of the letters (as in the last syllable of "Franklin") the original personality can only be guessed. This overall picture is very similar to samples produced by Parkinson patients, the similarity residing in the tremor, the very small size of the single letters and the signature as a whole, the angularity and the blurring (figure 10; taken from H. Oppenheim).

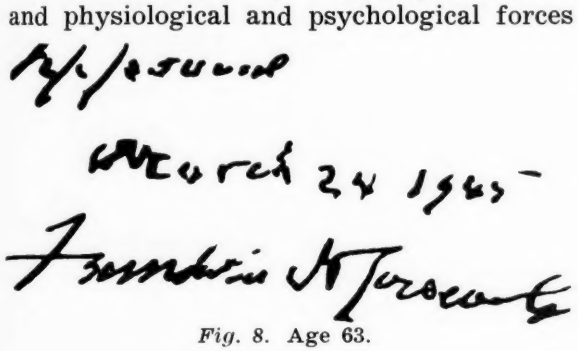

Fig. 8. Age 63.

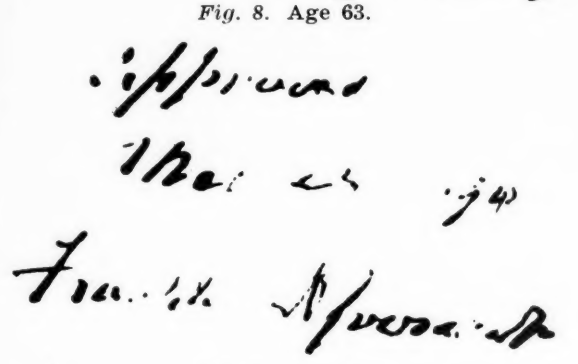

Fig. 9. Age 63.

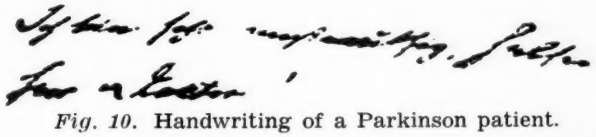

Fig. 10. Handwriting of a Parkinson patient.

In the typical Parkinson case the patient has to overcome a high degree of muscular rigidity; his handwriting loses smoothness, gracefulness, proportion, elasticity, all of which depend on the smooth play of the agonist-antagonist stimulations. Practically

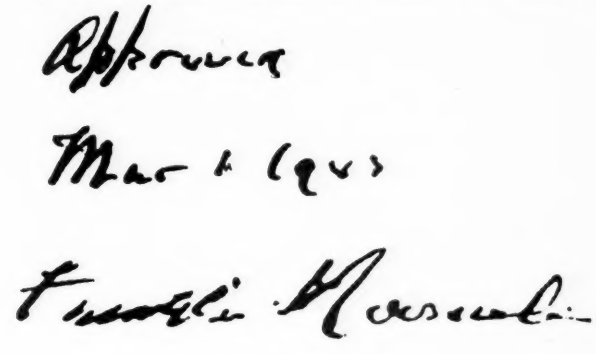

Fig. 11. Age 63.

the same trouble of coordination is seen in cases of anoxemia of the central nervous system, e.g., if the subject writes while in the low oxygen chamber (Gellhorn; Himwich). Did Roosevelt suffer from a localized disease in a particular region of the brain, possibly in connection with strokes? Writes Eleanor Roosevelt: "I have asked Dr. Ross T. McIntire whether he ever thought my husband had had a stroke and he assured me that he never had one." Pathophysiologically the theory of strokes cannot be maintained. The already-mentioned changes of the handwriting militate strongly against the assumption of an irreparable anatomical lesion to the brain tissue. What happened to Roosevelt happens rather frequently in arterio-sclerotic brains. There occur vaso-motoric spasms that for some time interfere with the normal oxygen supply. Functionally, the performance becomes erratic, and the general level of functioning is reduced. Pathological changes were present in the handwriting of the late President as early as 1940. They were fleeting in the beginning and all the changes were not present at the same time, but every sample since 1944 shows pathological changes, which may be accounted for by vascular spasms in an arterio-sclerotic brain.

Studies of the influence of vaso-motor spasms on the personality as a whole, and special functions such as thinking, writing, emotional continence, ability to negotiate, to stick to it, should be carried out in many of our patients who, beyond the critical age, try to keep leading positions, and become noticeable by committing grave errors.

Was Roosevelt capable of a correct self-evaluation, was he able to mobilize those psychological forces necessary for the compensation of the defect as he had been able to compensate for the physical and mental damage done by poliomyelitis? If so, what compensatory mechanisms could be considered? The answers to these questions must necessarily be meager as long as the primary sources will not be flowing freely, due to personal obligations, feelings of loyalty and the tendency to cover up one's own errors. There will consequently be some conjectures in our answers.

Our assumptions about compensatory mechanisms are, however, based on available psychopathological knowledge of severe organic diseases of the brain. One of the mechanisms often seen is the following: the patient retracts his personality and interests from his defect (anosognosia). This psychological reaction is understandable. First the diseased function is put at rest, and secondly, the patient recovers his self-assertion by looking away from, and denying, an unbearable defect. The effect of this mechanism is certainly not to compensate objectively for the defect as such, or to put other compensating functions to work. Often, while the moral level of the patient is restored, the functional level is not improved. Probably it was the anosognosic mechanism that kept Roosevelt going; he may also have mobilized his will-power, his positive outlook on life, his faith, but again these are not compensatory mechanisms in a technical sense. As far as we know, faith cannot compensate for organic defects of memory.

Contrariwise, other compensations are almost fully conscious. The patient does not look away, he knows his defect, but he does not wish others to know it. Such mechanisms have been observed in aphasia; the patient is not able to make precise statements, but he covers up by using the flourishes of politeness. The fact that such flourishes are available to aphasics, who cannot clarify their thoughts to themselves or others, will enable us to evaluate the flourishes of speech more correctly. The spoken flourishes are not any better than the written ones. In handwriting and in aphasia they cover a real defect. Their danger lies in their success. Those who believe that politeness is a sign of complete command of thought and linguistic expression will be taken in. In an extreme case that I described in former years the patient continued as a bank teller, and his superiors testified that they had not noticed any defect, but his secretary was not deceived. She said he had not been able to give correct change, and had let her handle that.

Were those around Roosevelt taken in by his anosognosic self-assertion or his more or less conscious coverings? The Roosevelt literature will have to be searched for the answer.

At any rate, these three attitudes, anosognosia, covering up, true mobilization of vicarious functions must have become noticeable to Roosevelt's own staff and to Stalin and Churchill during their meetings. At times he might have carried on, notwithstanding the defect; at other times, being aware of the defect, he might have covered up, under the guise of fatigue. Finally, in other cases, exhaustion might have forced him to throw in the sponge. Thus, a formerly magnetic personality had become erratic, unreliable, even as to mere presence and participation in negotiations.

Had the condition been recognized by medical men, what could have been done?

It is quite clear that the President should have retired without any delay, as much in his own interest as in that of the country, just as he retired when the poliomyelitis struck. Could he have been saved? There is nobody who can answer this question, but the possibility of saving his life must be admitted.

Our final remark refers to the services that grapho-diagnostics can offer to democracy in action. With all due respect to the judgment, the beliefs, the common sense of the common man, we have introduced the non-political merit system into civil service. This system has been functioning and keeps expanding within its proper limits. An increasing number of offices have been reclaimed from politics. Even if one admits that the office of the leading executive is a definitely political one, he will not have to shut his eyes before the tragic teachings of Roosevelt's decline. The man whom the people have elected to be the leading executive, especially if he happens to be beyond the age of fifty, should have to submit to periodic examinations of his health. While this has already been done for quite some time, it should be demanded that a) the examination be complete, and should embrace grapho-diagnostics; patho-developmental changes in the handwriting should be evaluated by a team of competent grapho-diagnosticians, physicians, neurologists; that b) the public should be informed about the results of these periodic examinations.

We do not believe in examinations of candidates for public office as a prerequisite to run. We do believe, however, in grapho-diagnostics as one of the best available tests on the basis of which the people may judge the candidates. There is no reason for the people only to listen to what the candidates say; there is every reason for them to read what competent grapho-diagnosticians and others may have to say about the character of the candidates.

Discussion and Summary

With our present knowledge of the connection between handwriting and diseases, we are in a position to prove the existence of disorders that affect the brain directly or indirectly, if and when they alter the oxidation process of the brain tissue and/or the motoric mechanisms depending on the full functioning of the brain tissue. Such diagnostic and prognostic results may be gained by examination of the handwriting specimens, when other methods will not yet yield results. Compared with the normal specimens of the same person, the general pressure may appear diminished, or increased or irregular, the script will lose its former rhythm, spacing and slanting; connections become irregular, syllables or letters are left out, the number of corrections increases, tremors appear within single strokes, and breaks evidence in the stroke. All this can cause such severe degrees of distention of the shapes as to render the handwriting illegible. In order to make the diagnosis of pathological changes, the former handwriting samples of the person, covering a number of years, should be known. The ideal method is close collaboration of the physician, especially the neurologist and psychiatrist, with the grapho-diagnostician.

Author's Note: The foregoing article is based on an investigation by this author, in collaboration with Herry O. Teltscher, grapho-diagnostician, New York City. Both of us have cooperated in the grapho-diagnostic part (character and developmental diagnosis). The author is responsible for the neuro-psychiatric part.

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Aspiration in Electroshock Therapy

ERNEST KAHN, M.D.
Boston, Massachusetts

Pulmonary infections are uncommon but serious complications in electroshock therapy. Until recently, only single case reports of lung abscesses, occurring during courses of electroshock, had appeared in the literature. Meduna and Friedman[6] found lung abscesses in about 0.1 per cent of their cases. One case in a series of 200 schizophrenics treated with electroshock was added by Kalinowsky and Worthing. Another observer found one case in over 300 treated patients.[9] Altschule and Tillotson[1] reported one case in 200 patients. Titeca[8] cited 2 cases, and Conway and Osmond[2] reported one case. The only series of any size has been published by Kwalwasser et al.,[5] who reviewed 25 cases of lung abscesses. These 25 cases represented approximately 1 per cent of the total number of patients treated, or 0.05 per cent of the total number of treatments given. The average course per patient consisted of 20 treatments. A single case observed by the writer occurred in a young woman who was treated with electroshock, despite an upper respiratory infection.

Case Report

N.U. (No. S2161), a 29 year old female factory worker, entered the Boston Psychopathic Hospital, May 2, 1950, complaining of depression and anorexia of two years' duration. On admission, physical examination and laboratory studies were within normal limits except for evidence of malnutrition. Her psychiatric diagnosis was schizophrenia, paranoid type.

Because of her depressive symptoms she received electroshock therapy, administered three times weekly, beginning May 10, 1950. After the tenth treatment she was found to have nasopharyngitis, but treatments were continued until she had the course of twelve. On June 6, 1950, the day following her last treatment, she developed fever of 103° F., tachycardia of 130, and cough. Penicillin was administered intramuscularly 50,000 units every three hours.

On June 9, 1950, a chest film revealed a lung abscess with a fluid level in the superior segment of the right lower lobe.

The patient was transferred to a general hospital where she was treated on an intensive medical regimen. Her respiratory condition gradually improved. Another chest film on July 18, 1950 showed disappearance of the abscess.

It appeared that one of the mechanisms of abscess formation in this patient was the aspiration of septic material from the nasopharynx. In order to investigate the manner in which substances are aspirated in electroshock, the following study was undertaken.

Material and Method

A group of 26 unselected psychotic patients receiving electroshock therapy at the Boston Psychopathic Hospital were studied; 19 were females and 7 were males, ranging in age from 18 to 55 years; 15 were diagnosed as manic-depressives, or as involutional melancholic; the remaining 11 were schizophrenic.

During the tonic phase of electroshock a No. 16 French catheter was passed through the nose into the nasopharynx. Ten cc. of iodized oil (Iodochloral, Searle), which is ordinarily employed in bronchography, were gently instilled while the patient was in the tonic phase. X ray films of the chest were taken at intervals during recovery from the seizure. A record was made of the patient's respirations.

A Reiter Electrostimulator was employed, which delivered 60 cycle AC current in doses of 110 volts, 10-20 milliamperes, for 10 to 20

From Harvard Medical School and Boston Psychopathic Hospital.

seconds. Patients were treated in the supine position on a hospital litter or directly on an X ray table. One of two types of mouth gags were used, either a loop of rubber tubing, or a rubber dental guard designed by Holt. The type of gag described by Titeca,[8] which is reported to reduce aspiration was not used.

Results

In all of the 26 cases, sufficient radio-opaque oil was aspirated to be visible by X ray. The quantity of oil aspirated was graded as follows:

1. +=traces
2. ++=outlining of hilar bronchi (main and lobar)
3. +++=outlining of bronchi of more than one lobe (main, lobar, thir order)
4. ++++=outlining of bronchi of more than one lobe (main, lobar, third order) and beyond)

Seventeen patients showed ++++ aspiration in one or both lungs; eight showed aspiration in both lungs.

Of the remaining 9 patients, 5 showed +++ in one or both lungs, and 4 showed ++ bilaterally. Oil continued to be visible in the lungs for one to three months after its aspiration. This coincides with the findings following bronchography.[3]

Discussion

The mechanisms underlying lung abscess formation following electrically induced convulsions have been described by Altschule and Tillotson.[1] During the tonic phase of the seizures there is elevation of the diaphragm and compression of the lung. The maximal inspiration, which occurs at the end of the seizure, causes aspiration of secretions from the upper respiratory tract. If these secretions lodge in an atelectatic area of previously compressed lung, an abscess may result.

Radio-opaque substances instilled into the pharynx of normal, sleeping subjects[7] can also be observed in the lung the following

	Patient	Sex	Age	Psychiatric Diagnosis	Vol of Oil cc.	Time Interval Between Electrostock and X-ray	Number of Respirations	X-ray Distribution of Oil	
								Right	Left
1.	W.G.	M	18	D.P. Hebephrenic	10	0' 7"	4	++	++
2.	E.E.	F	45	Inv. Mel.	10	0' 35"	18	++++	++
3.	R.F.	F	52	Inv. Mel.	12	0' 46"	24	++	++
4.	F.A.	M	24	D.P. Paranoid	10	0' 50"	17	+++	++
5.	E.F.	F	43	Inv. Mel.	12	1' 2"	24	++	++++
6.	P.S.	M	46	M.D. Depressed	10	1' 26"	27	++++	++++
7.	T.M.	M	25	D.P. Simple	10	1' 50"	32		+++
8.	L.S.	M	21	D.P. O.T.	10	2' 2"	35	++++	++++
9.	J.P.	F	44	Inv. Mel.	10	3' 30"	63	++	++++
10.	J.S.	F	46	M.D. Depressed	10	3' 35"	42	++	++
11.	J.G.	F	54	Inv. Mel.	10	4' 20"	46	++++	++++
12.	E.Y.	F	50	D.P. Paranoid	14	4' 30"	79	++++	++++
13.	E.F.	F	40	D.P. O.T.	10	4' 35"	101	++	++++
14.	B.G.	F	51	Inv. Mel.	12	6' 10"	108	++++	++++
15.	H.D.	M	30	M.D. Depressed	10	13'		++++	+++
16.	D.F.	F	23	D.P. Hepephrenic	12	17'		+++	+++
17.	I.K.	F	25	D.P. Paranoid	12	17'		++	++
18.	J.B.	M	26	M.D. Depressed	10	20'		++	++++
19.	M.M.	F	30	M.D. Depressed	10	24'		++	+++
20.	M.S.	F	54	M.D. Depressed	10	24'		++++	++
21.	L.S.	F	44	M.D. Depressed	10	25'		+++	+
22.	A.S.	F	39	D.P. Paranoid	10	32'		++++	+
23.	K.V.	F	50	Inv. Mel.	10	35'		++++	++++
24.	C.B.	F	55	M.D. Depressed	10	36'		++++	++++
25.	H.H.	F	28	D.P. Paranoid	10	52'		++++	++++
26.	T.C.	F	41	D.P. Paranoid	10	60'		++	++++

Key: D.P.=Dementia Praecox
M.D.=Manic-Depressive
O.T.=Other Types
Inv. Mel.=Involutional Melancholia

morning. It appears that aspiration occurs under circumstances in which the cough and swallowing reflexes are abolished. Moreover, the special conditions which prevail following an electrically induced seizure favor aspiration.

An attempt was made to analyze our data in the hope of relating the quantity of oil aspirated to other factors. Age, sex, psychiatric diagnosis, general behavior, number of electroshocks, and bodily build had no appreciable relationship to our subsequent findings. This is at variance with Kwalwasser's[5] report on patients who developed lung abscesses where "age and disturbed behavior were the most significant determinants."

The objection may be raised that a radiopaque oil, being of different viscosity from the respiratory secretions which are elaborated in electroshock, would be dispersed more readily through the bronchial tree. However, the reverse may be anticipated since the oil employed here is more viscous than the secretions induced by electroshock.

Since electroshock induces profuse salivation and increased bronchial secretions the use of ten cc. of oil in this study does not appear to be excessive.

Septic secretions appear to be particularly likely to produce abscess, as indicated by our patient who suffered from nasopharyngitis and another case[2] in which Vincent's gingivitis had been present prior to electroshock treatment.

Inasmuch as material from the nasopharynx is aspirated following electroshock, special precautions should be observed in order that pulmonary infections may be averted. Infections of the teeth, paranasal sinuses and tonsils, as well as nasopharyngitis and tracheobronchitis, should be treated before electroshock is administered. When such infections supervene during a course of electroshock, the electroshock should be discontinued.

Summary

1. A case of lung abscess occurring during electroshock therapy is reported.

2. The aspiration which follows an electrically induced seizure was studied. Radiopaque oil was instilled into the nasopharynx of patients during the tonic phase of the seizure and X ray examination of the chest was made during recovery.

3. Of 26 patients studied, oil was aspirated in all cases and large bronchi outlined. Seventeen patients showed widespread (++++) dispersion of the oil in the smaller bronchi.

4. Inasmuch as material from the nasopharynx is aspirated following electroshock, special precautions should be observed in order that pulmonary infections may be averted. Infection of the teeth, paranasal sinuses, and tonsils, as well as nasopharyngitis and tracheobronchitis should be treated before electroshock is administered. When such infections supervene during a course of electroshock, the electroshock should be discontinued.

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Electroencephalographic Survey of a Mental Hospital

(With Special Reference to Temporal Lobe Abnormalities)

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This survey was stimulated by the report of Miss Esther Stearns to the Metropolitan Association of Electroencephalographers in the winter of 1950. Miss Stearns found discrete Eeg changes in the temporal area of some psychotic patients admitted to Bellevue Hospital in New York City. The connection of the rhinencephalon, a part of which is buried in the temporal lobes, with emotions was suggested by the classical work of Papez[1] in 1937. Kluver and Bucy,[2] in 1939, produced marked behavioral changes in monkeys by bilateral ablation of the temporal lobes, including the amygdaloid nucleus on both sides. Gibbs and Fuster[3] described negative spikes derived from the anterior temporal leads in psychomotor epilepsy. Furthermore, they attracted attention to the interictal behavioral abnormalities in psychomotor epilepsy, which may be mistaken for schizophrenia or psychopathic state. Rey et al.[4] impressed by behavioral abnormalities in individuals with temporal lobe lesions and by the previous reports of Hill[5,6] on Eeg changes in the temporal area in aggressive psychopaths, made a study of 3000 records from the Maudsley Hospital. Fifty-nine cases with temporal lobe abnormalities were collected. The Eeg abnormalities and the clinical picture were divided into three groups:

a. Epileptic group with evidence of clinical epilepsy and corresponding slow waves or spikes in the temporal lobes.

b. Epileptoid group with less specific disturbances than in the first group but showing paroxysmal slow or fast activity as well as theta waves localized in the temporal area. The corresponding clinical picture consists of attacks of irritability, aggression and anxiety. Many of these patients were classified previously as hysteria or schizophrenia.

c. Constitutional group with slow wave dysrythmia in the temporal area. The corresponding clinical picture consists of passive dependent reactions, a tendency to phantasy, shyness, immaturity, egocentricity and inability to adapt to the environment.

From the V. A. Hospital, Lyons, N. J.

Method and Material

This study extended from the spring of 1950 to late summer of 1952. Fifteen hundred psychotic patients at Lyons Veterans Administration Hospital were subjected to careful Eeg studies with the temporal leads run for a longer period of time than in routine records. Each time an abnormality was suspected on one side in the temporal area the record was repeated. Only a deviation from the normal, which occurred in three different records, was considered for the study. As many as three to 17 records were taken on several patients. The majority had sleep records, sleep being induced with three grains of seconal orally, or occurring spontaneously. A six channel electroencephalograph was used for all the records. The method of recording was the so-called monopolar, the ear lobules serving as a reference point. Where monopolar localization was doubtful, bipolar leads were also used. The electrodes were fixed to the scalp with bentonite paste. The subjects were all chronic psychotic patients, male veterans of World War I and World War II.

Diagnostically the 1500 patients in this study were distributed as follows:

Schizophrenia	766
Convulsive Disorders	172
Others (alcoholism, psychopaths, organic psychosis	562
Total	1500

Thirty out of the 1500 patients showed either slower activity with higher amplitude or negative spikes, at times with phase reversal in the anterior temporal and temporal leads on either side. Of these 30 cases, 12 were known to have a verifiable organic lesion in the temporal area; the remaining 18 cases were epileptics. Since the termination of this survey several more cases with Eeg abnormalities in temporal area without demonstrable lesion were found and they also

were epileptics. Two of the newer cases were added to this study. The type of seizure in the 20 cases under study is as follows:

Grand Mal only	13
Grand Mal and psychomotor	6
Akinetic	1
	20

The tracings consisted either of rhythmic or of dysrhythmic background. This varied from record to record in the same subject. In the anterior temporal and temporal area the most frequent finding was a focus with higher amplitude and slower activity which predominated on one side, usually the left, but could occasionally also be seen on the other side. The frequency and amplitude of the focus was not fixed and uniform but varied from record to record or from place to place in the same record. The slow activity and higher amplitude recorded from the 12 cases with demonstrable lesion in the temporal area was always unilateral, on the side of the lesion, more uniform in appearance and more constant than in the 20 cases in this study. Negative spikes with phase reversal were found in addition to slowing and amplitude asymmetry in the anterior temporal area on some cases of typical psychomotor epilepsy. Quite often the spikes were on the side opposite to the higher amplitude and slower activity. Very occasionally the slower activity spread from the temporal to parietal or occipital leads. Sleep always exaggerated the focal differences between both sides.

Clinical Correlations

The patients under study could roughly be divided into three clinical groups.

GROUP I—Organic group (without demontrable lesion in the temporal lobe).

a. Schizophrenics with seizures following extensive electro-shock therapy (2 cases).
b. Post-traumatic seizures (1 case).
c. General paralysis (1 case).
d. Akinetic seizures with involvement of pyramidal tract and cerebellar pathways (1 case).

GROUP II—Grand mal seizures with epileptic deterioration characterized by irritability, temper tantrums and intellectual defect (4 cases).

GROUP III—Grand Mal with or without psychomotor seizures associated with psychopathic-like or schizophrenic-like symptomatology which frequently was more outstanding than the seizures (11 cases).

The patients in group III with schizophrenic-like symptomatology exhibited paranoid delusions, homosexual preoccupations, auditory hallucinations, perplexity, feelings of unreality and disturbance of associations. Yet with careful scrutiny one could find a distinct difference between these manifestations in schizophrenics and our patients. The intensity of these schizophrenic-like manifestations fluctuated within short periods of time in the group of our patients contrary to the greater fixity of symptoms in true schizophrenias. It was not unusual to see such a patient with markedly psychotic manifestations for a few days and then perfectly lucid for the rest of the week. Frequently control of seizures with anticonvulsive medication and supportive psychotherapy were sufficient measures to improve the clinical picture.

Comment

What is the possible significance of the slow focus in our cases? Gowers[7] in 1885 cited earlier observers who had reported sclerotic changes in the hippocampal formation in a few epileptics, but the question of whether the findings were secondary to the seizures or the cause of seizures was left open. Penfield and Erickson[8] also support Gowers' view that it is difficult to tell which is the cause and which the effect. In view of the inability to verify the state of hippocampus in our cases the only thing we can do is to suggest that the changes described in hippocampus by earlier authors may be connected with the rather fleeting focal Eeg changes in the temporal leads. Of course it is also possible that the temporal lobe has nothing to do with the activity recorded by the temporal leads. From the purely clinical standpoint, however, the changeable, fleeting, inconstant slow activity recorded with temporal leads on one side or the other is in our opinion an indication of an epileptic disorder which may be due to various causes. Such a focus in a psychiatric patient with schizophrenic or psychopathic-like symptomatology should make further search for epileptic manifestations imperative. In some cases the mental symptoms predominated to such an extent that they completely sub-

merged the epileptic nature of the condition. Four representative cases will be reported.

Case 1. J.E., age 37, male, had a history of inadequate social adjustment, impulsive behavior, vagrancy, inner tension and alcoholic excesses. In 1945, while on leave from the Navy, he suddenly felt a compulsion to jump off the train. On Sept. 9, 1949 he was admitted to the hospital for a headache which developed several days after a head injury. A pneumoencephalogram done in the same hospital on Sept. 27, 1949 revealed some dilatation of the left lateral ventricle. In 1950 he first reported spells of amnesia. Thus he would go to sleep, but two days later find himself riding freight cars. During one of these "spells" he assaulted his sister-in-law. At approximately the same time he also had attacks of dizziness and fainting. The psychological tests revealed a total I.Q. of 117 on Wechsler-Bellevue. The Rorschach report read "basically disorganized personality with psychosexual disturbance." On physical examination nothing of significance except severe hyperidrosis of palms was elicited. The neurological examination was negative except for hypesthesia of the three middle fingers of the left hand. X-ray of skull was negative. The pineal was calcified and not displaced. The patient carried diagnoses such as psychopathic personality and schizophrenia. Eeg: Four Eegs were taken. A slow focus in RAT and RT was observed in all the records. (See Fig. 1.)

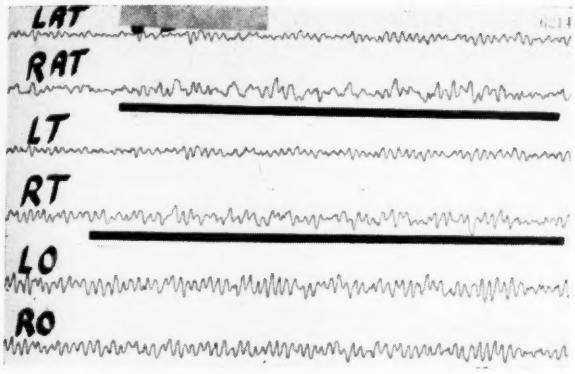

Fig. 1. History of psychopathic-like behavior for a number of years before psychomotor attacks where observed. Notice slow focus in the right temporal leads.

Case 2. J.G., age 27, male, was admitted to the hospital in 1949 for grand mal and psychomotor seizures he has had since 1945. The psychomotor seizures were manifested by sudden outbursts of assaultiveness, lasting for approximately one half hour. Patient had complete amnesia for the outbursts. In addition there were marked mental changes consisting of vague delusions and auditory and visual hallucinations. The patient reported that he saw God, that he heard God talking to him and that at one time he was Santa Claus' helper. He was well oriented in all spheres and if not close to a seizure was pleasant and helpful. The neurological examination including careful visual field study was entirely negative. X-ray of skull was also negative and pneumoencephalogram negative. Due to Eeg findings (see below) the tip of the left temporal lobe was ablated by Dr. William Ehrlich in Sept. of 1951. No gross or microscopic pathology, except hemorrhagic area due to the procedure, was found by the consulting neuropathologist (Dr. Arthur Weil). An electro-corticogram during the procedure failed to reveal abnormal findings on the surface of the anterior portion of the temporal lobe.

Eeg: Twelve Eegs were taken. In all the records a definite slow focus with higher amplitude was found in LAT and LT. Scattered byphasic spikes were seen in some records. In sleep the slow focus was more definite and in addition negative spikes in RAT with phase reversal in other leads could be demonstrated. (See Figs. 2 and 2A.)

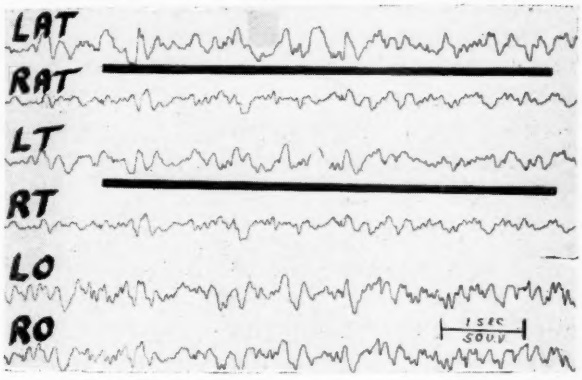

Fig. 2. Psychomotor seizures with schizophrenic-like interictal symptomatology. This is a sleep record with a slow focus in the left temporal leads.

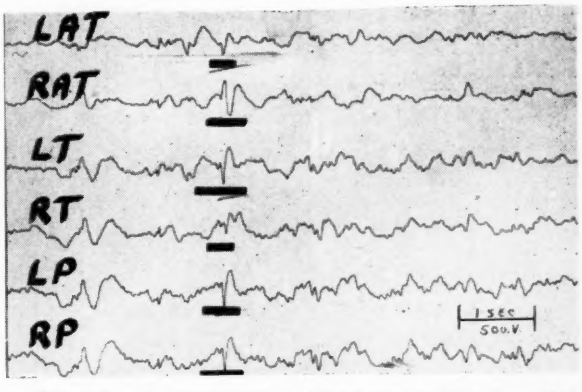

Fig. 2A. Sleep record. Negative spikes in right anterior temporal lead with phase reversal in other leads on the same patient as Fig. 3.

Case 3. W.P., age 52, male, died in 1951 from pyelonephritis and uremia. Since the end of World War I he had suffered from frequent grand mal seizures. In 1930 he was admitted to the hospital and diagnosed as epilepsy with psychosis and mental deterioration. Despite anticonvulsive medication he had severe and frequent grand mal seizures throughout his hospitalization. He was slow, apathetic with severe temper tantrums. Neurological examination was negative. Flat x-ray of skull was negative. At the autopsy, which was done by Dr. A. Weil, the

brain weighed 1520 grams. Pia arachnoid was opaque with pus along the meningeal vessels. Arteries were atrophic and tortuous. There was no evidence of gross lesions in the brain substance.

Eeg: Six Eegs were taken. In the largest part of the records there was a slow focus in LAT and Lt, but occasionally the focus shifted to RAT and RT. See Fig. 3.

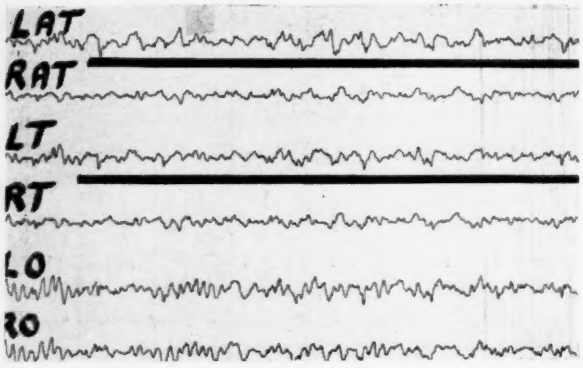

Fig. 3. Grand mal seizures with mental deterioration. Notice slow focus in the left temporal leads.

Case 4. A.W., age 31, white, male, was admitted to the hospital in 1949 for suicidal, homicidal and paranoid ideas as well as grand mal seizures. He came from a broken, disorganized home with an alcoholic father and probably an epileptic mother. Several of his siblings had reformatory records. The patient was discharged from the Army in 1944 because of seizures, which apparently started at that time. Seizures were preceeded by a poorly defined sensation in epigastrium mounting to his neck. The patient also claimed that during some of the spells he did not lose consciousness. While in the hospital he learned how to read and write and in addition he became extremely religious. He associated with a religious sect and developed close friendship with the members of this church. His behavior greatly improved; he developed interest in religious matters and in education; he studied assiduously, mainly the subjects of reading and writing and three years after his admission was discharged in the custody of a member of his church. The psychological test revealed a total I.Q. of 110 on Bellevue-Wechsler. X-ray of skull revealed digital markings. Pneumoencephalogram was negative. Neurological examination was negative.

Eeg: Six Eegs were taken. In each one of them, negative spikes without phase reversal were seen either in LAT and LT or in RAT and RT. The slow focus with higher amplitude could be elicited bilaterally, but it predominated in LAT and LT in all the records. See Fig. 4.

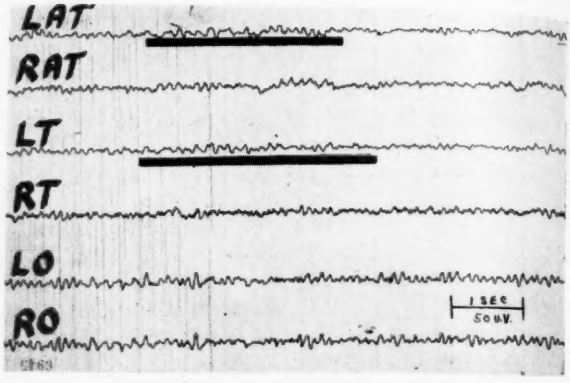

Fig. 4. Unstable behavior pattern with homicidal, suicidal, paranoid and homosexual preoccupations and grand mal seizures. Notice discrete focus in the left temporal leads.

Summary

An electroencephalographic survey of 1500 chronic psychotic patients, of whom 50% are schizophrenics, was done in a Veterans' hospital during a 2 year period. Special attention was paid to abnormalities in the temporal area. Only 30 patients consistently showed a slow focus with high amplitude derived from the temporal leads. Twelve of the 30 patients had a definite lesion in the temporal lobe. The other 18 patients had no demonstrable temporal lobe lesion, but consistently showed a slow temporal focus of variable frequency and amplitude, usually on the left side. The same focus could occasionally be seen in the same patient on the opposite side and was always made more distinct in sleep. All of the patients had grand mal, grand mal and psychomotor and in one case akinetic seizures. Eleven of the 20 cases with and without psychomotor seizures had schizophrenic-like interictal manifestations, whose intensity fluctuated from day to day and clear, lucid periods were frequent. The latter group frequently carried diagnoses of schizophrenia and psychopathic personality at previous admissions or at the initial examinations, since the epileptic manifestations were lost in the more prominent psychotic symptomatology.

Authors' Note: The foregoing report is published with permission of the chief medical director of the Dept. of Medicine and Surgery, Veterans Administration, who assumes no responsibility for the opinions expressed or conclusions drawn by the authors.

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The Electroencephalogram in the Post-Traumatic Headache Syndrome

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With the increase in number and use of automobiles in our society, head injuries have become very common. The fact is, that such injuries are on the increase and with the additional medical legal aspect, it poses a major problem for the medical profession. According to Simon and Wolff,[7] one-third to one-half of the people who receive injuries to their heads that warrant hospitalization develop chronic post-traumatic headaches. Relatively few have subdural hematoma, sub-arachnoid hemorrhage or adhesions involving pain sensitive structures. Since few of these cases exhibit positive findings on a careful neurological examination, the position that the electroencephalogram holds as a diagnostic tool in this syndrome is reviewed.

Wolff[7] lists the following basic mechanisms for headaches arising from structures within the cranial cavity.

1) Traction on the veins that pass to the venous sinuses from the surface of the brain and displacement of the great venous sinuses.
2) Traction on the middle meningeal arteries.
3) Traction on the large arteries at the base of the brain and their main branches.
4) Distension and dilation of intracranial arteries.
5) Inflammation in or about any of the pain-sensitive structures of the head.
6) Direct pressure by tumors or adjacent tissue on the cranial and cervical nerves containing many pain afferent fibers from the head.

It is thought that the above proposed mechanisms are of minor significance in the causation of post-traumatic headache syndrome.

The headache these people complain of may be divided into three types for descriptive purposes:

1) Pressure sensation or ache in a cap-like distribution or in a circumscribed area associated with tenderness on pressure.
2) Similar to the above but associated with tenderness at the site of the impact.
3) Throbbing component in the attack.
4) Types one and two in combination.

Incidence of headaches following head injuries has been variously stated; Guttmann 50%; Russell 42%; Penfield 33%; Robotham 80%; Knoflack and Scholl[1] 100%.

Most of the studies on the post-traumatic syndrome consider the patient's personality make up and factors surrounding the accident of importance in determining the residual symptoms. The non-specific nature of the electro-encephalogram in neuropsychiatric conditions makes it important to elicit the differences between what may be inherent tendency to psychiatric illness and what is certainly acquired as the result of trauma. Thus it would be well to study Greenblatts'[6] electroencephalographic findings on a large series of controls.

1) 230 members of the medical staff had 7% abnormal tracings.
2) 120 neuropsychiatric unfit servicemen had 15% abnormal tracings.
3) 206 psychopathic personalities revealed 25% abnormal tracings.
4) 500 schizophrenic patients had 27% abnormal tracings.
5) 288 neurosyphilitic patients had 45% abnormal tracings.
6) 233 non-psychotic post-traumatic cases had 47% abnormal tracings.
7) 30 post-traumatic psychotics had 58% abnormal tracings.
8) 300 idiopathic epileptics had 72% abnormal tracings.
9) 94 post-traumatic headache cases had 33% abnormal tracings.
10) 37 non-traumatic headache patients had 35% abnormal tracings.

It can be seen in this small series that there was no clinical difference in the number of abnormal electro-encephalograms found in the non-traumatic headache cases and the post-traumatic patients.

Destruction of brain tissue cannot be detected by the electroencephalogram unless involvement is sufficiently extensive to reduce normal electrical activity. Thus we may assume that abnormality persisting in the brain wave after head injury is due to continued abnormality of the cerebral tissue. We may find the abnormality persisting after clinical recovery which may mean that the residual cerebral dysfunction is not demonstrable by our usual methods of clinical investigation. One also finds clinical symptoms with a normal electroencephalogram or after a once abnormal electroencephalogram has become normal. Does this argue for the psychogenic etiology of the post-traumatic syndrome or is it possible that there is too complete destruction of damaged tissue which then is electrically inactive or rather there is full resolution?

Williams[4] found that when symptoms persisted with an abnormal tracing recovery frequently took place. Contrary, when symptoms persisted with a normal electroencephalogram, full recovery was rare.

Most workers could find no definite relationship between the duration of the interval from the injury and the abnormality of the electroencephalogram (Greenblatt,[6] Hippenstall[2]). There was a lapse of weeks to years between initial injury and study of the cases. Ross and McNaughton[5] felt that a lapse of two years diminished the electroencephalographic abnormality and were not able to show a significant correlation between the brain wave obtained two years after the injury and the severity the trauma or between the brain wave and the pneumoencephalographic findings. Out of 150 cases studied by Hippenstall,[2] 78 (52%) had an abnormal electroencephalogram. Abnormal response to hyperventilation was found in 45% of the 78 and in 5 this was the only abnormality. Focal abnormalities were found in 32 patients (41%) and 41 (53%) revealed diffuse changes. It was of interest that in patients below twenty years of age, 65% had abnormal tracings as compared to 46% above twenty.

Focal electroencephalographic changes were found most in patients with long post-traumatic amnesia, traumatic epilepsy, and in those with negative personal history. Diffuse abnormalities were seen often in patients with symptoms of depression, anxiety, hysterical syndrome, and with short periods of post-traumatic amnesia and positive personal history.

Ross and McNaughton[5] studied a series of 90 patients of which 68 had complaints and 22 had no complaints. The ratio of electroencephalogram abnormalities were the same in both groups. All his reported abnormal tracings were substantiated by pneumoencephalographic evidence of cerebral pathology. They felt that patients with localized headaches had low ratings for an unstable personality background, high brain wave disability ratings and also severe injury and pneumoencephalographic changes as compared with other types of headaches. Also it was their opinion that the brain wave ratting of abnormality was more conservative than the rating of encephalographic changes.

Williams[4] studied 325 head injuries, trivial and severe; remote and twelve year intervals; findings 162 (50%) with abnormal tracings. In a control series of 160, 9 abnormal graphs were found. None of these patients had symptoms. The changes were of a generalized nature consisting of low voltage 2-7 per second waves underlying a dominant frequency of 8-10 and 15-25 per second waves. Harris[3] felt that the appearance of abnormal waves during a set period of hyperventilation was the significant change noted after head trauma.

The electroencephalogram is a clinical diagnostic aid in dealing with head trauma cases. In the presence of focal brain wave changes or the appearance of progressive differences noted on serial tracings taken at intervals after injury, there is additional strong evidence of cerebral dysfunction. However, one must weigh the electroencephalographic findings with the total clinical picture and neither overvaluate nor underrate its significance.

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Psychomotor Epilepsy in Children

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According to Lennox,[1] the syndrome of psychomotor epilepsy makes up only about 10 per cent of the epileptic manifestations in the first decades of life. Because of its relative rarity it is often misdiagnosed or overlooked as a possibility in differential diagnosis in children. Nevertheless, it has some characteristic features. Greater awareness of these features in children would probably result in an increase in its recognition. This has been the case in adult psychomotor epilepsy. Roseman[2] reported that the incidence of psychomotor epilepsy in adults was 15 per cent of all epileptic disorders; on reviewing his cases, however, he later determined the incidence to be 40 per cent.

There is no manifestation of the psychomotor attack that is as obvious as a convulsion (grand mal) or the three per second blinking of the eyes (petit mal). The psychomotor seizure has been defined broadly by Kahana and Robertiello[3] as a condition characterized by periodic episodes of uncontrollable behavior without convulsive movements, associated with cerebral dysrythmia. During the attack the patient usually appears to be conscious. He may or may not have amnesia for the episode. It has been pointed out by Lennox[4] that there is often a good deal of oral activity during the seizures, including biting, spitting, sucking, chewing, and smacking of the lips. However, the seizures may consist of somatic pain,[5] breath-holding spells, sleep, night terrors, dizziness, weakness, or episodes of impulsive erratic behavior. In the three cases we have summarized herein, there were homicidal or suicidal attempts during seizures. Complete loss of consciousness usually does not occur, but there is an alteration of consciousness. The episodes are periodic; the activity during these episodes is quite unlike the child's usual behavior. In contrast to adults, headache and dizziness in children are rare and should be considered seriously as a sign of physical disorder. Psychomotor epilepsy may manifest itself by episodes of headache and dizziness.

There is usually a behavior disorder in children who have psychomotor seizures. Gibbs[6] reported that psychiatric disorders are three times as great with focal seizures in the temporal area as in any other cortical area; psychomotor discharges usually are localized in this area. The characteristic picture is that of a child who has difficulty with control of his impulses. The child is usually cooperative, good, quiet, and overcontrolled but has episodes of impulsive and often violent and destructive behavior.

The art work of these children is dramatic and characteristic. The drawings display the children's problem of dealing with violent emotions and making a great effort to control them. They usually consist of bright colors, especially red, green, and yellow. The drawings are done in a controlled, compulsive way with emphasis on the heavy borders that surround the bright colors.

The electroencephalogram will usually show the characteristic psychomotor pat-

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tern, as was pointed out by Gibbs and Lennox,[7] of flat-topped 4-6 per second waves appearing in bursts especially over the temporal area. There is frequently a marked response to hyperventilation and records are more likely to be abnormal during sleep, as has been emphasized by Gibbs.[8]

Physical and neurological reflex and sensory examinations are usually normal. Psychological testing usually reveals an overcontrolled child who has difficulty dealing with his hostile impulses, which break through on occasion. The strong defenses along compulsive lines are prominent in the picture.

The following are three brief case reports:

Case 1: Sandra is a 9 year old colored girl admitted to the hospital because of shy withdrawn behavior at school and violent jealousy of her sister at home, which included destroying her food and clothing, attacking her with a knife, and putting poison in her food. The patient had a history of occasional enuresis and of episodes during which she had headaches, dizziness and was unable to walk. On admission it was difficult to believe Sandra's behavior at home was so aggressive. She was a quiet, shy, over-controlled girl and was always passive and compliant. Physical and neurological examinations were normal. Electroencephalogram was dysrhythmic and showed a focus in the right fronto-temporal region. Sandra became more sociable on benzedrine and had only rare agressive outbursts and seizures on the ward.

Case 2: Raymond is a 10 year old Puerto Rican boy who was admitted because his mother could not handle him when he had violent attacks of fury. During these he would bite and cut himself and threaten to jump out of the window or slash his throat with a knife. He complained of attacks of headaches, dizziness, and vomiting since he was 5. He became pale and shaky during them but he did not lose consciousness. Between these attacks he was good and obedient. On the ward he was compliant with adults but fairly aggressive with children. Physical and neurological examinations were normal. The electroencephalogram was abnormal and showed paroxysmal slow (4½-6 per second) discharges most marked in the temporo-motor and parietal areas.

Case 3: Emily is a 10 year old Negro girl admitted because of hostility toward her younger sister and episodes of bizarre behavior. During these episodes she cried, tore off her clothes, went into a rage, drooled and spat over herself. She did not seem to know what she did during these attacks and was confused afterward. Her behavior toward her sister was quite violent on occasion, including throwing a knife at her and trying to set fire to her. Usually Emily was quiet, rather shy and well behaved. On the ward she was always quiet and overcontrolled and had no seizures or aggressive behavior. Physical and neurological examinations were normal. Electroencephalogram was abnormal and showed the typical psychomotor pattern. She improved considerably in her ability to socialize on benzedrine.

Differential Diagnosis

Because of the violent and sometimes bizarre behavior these patients may be misdiagnosed as schizophrenic. However, they exhibit none of the physical features (poor tone, flabbiness, minor neurological signs, whirling and other motility difficulties) mentioned by Bender.[9] Also their bizarre behavior is episodic with relatively normal periods in between. Then there is no loss of reality differentiation in the patients with psychomotor epilepsy. Also there is a definite difference in the art work, which is fluid and plastic in the schizophrenic and compusive with bright colors in the patients with psychomotor epilepsy. The electroencephalogram also helps in differentiation.

The episodic nature of the outbursts with overcontrolled periods in between should help distinguish this syndrome from a behavior disorder.

Some of the important points are included in the table below.

Treatment

Because of limited experience and short-term follow-up, the author can give no evaluation of the results of therapy. It has been quite striking in his experience that the seizures seemed to stop once the patient was removed from the home. Roseman and Aring[10] found that 75 per cent of adults with psychomotor epilepsy could be helped by drugs. Lennox[4] was quite optimistic about treatment in children.

There is much difference of opinion as to what drugs should be used in children. Peterman[12] favors the ketogenic diet. Bradley[13] says that benzedrine is the best drug for controlling the behavior disorder and that phenobarbital increases irritability and hypermotility. Lennox[4] favors beginning with phenobarbital and then using Dilantin and Mesantoin if necessary. He stresses the social and psychological treatment and the fact that activity should not be restricted. The general feeling is that psychotherapy and environmental manipulation can be of value.

DIFFERENTIAL DIAGNOSIS

	Childhood Schizophrenia	*Behavior Disorder*	*Psychomotor Epilepsy*
1. *History of Behavior*	Consistently abnormal and sometimes bizarre behavior	Consistently abnormal behavior	Episodes of violent behavior in otherwise good compliant child
2. *Reality Testing*	Disturbed	Normal	Normal except during seizure
3. *Episodes of Altered Consciousness With Headaches, Dizziness, etc.*	None	None	Present
4. *Physical and Neurological Examinations*	Minor neurological signs, poor tone, motility disturbances (whirling, clinging, etc.)	Normal	Normal except after repeated seizures
5. *Electroencephalogram*	Abnormal in 81% (11)	Abnormal in 65% (11)	Abnormal in 86% (11) Characteristic paroxysms of slow waves especially over temporal areas
6. *Art Work*	Plastic, fluid (9)	Variable	Compulsive, controlled, bright colors, definite borders

Summary

1. The syndrome of psychomotor epilepsy in children with the characteristic seizures and the behavior disorder is described.

2. Three cases are presented briefly.

3. Differential diagnosis between schizophrenia and behavior disorder is discussed.

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The Understanding of Psychic Masochism

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In forming their considered opinions, people generally proceed according to two guiding patterns: common sense and probability. E.g., in the case of a public dressing-down administered by a wife to her husband, general opinion among witnesses will credit the poor humiliated husband with a feeling of indignation, and bestow upon him the feeling of pity. Involuntary witnesses to a vicious quarrel between two business associates—officially partners but unequal in power, with one in possession of the financial whip and the louder voice—will bestow their sympathy upon the underdog. Many other similar examples could be adduced.

The yardstick in both cases described is, first, the common sense judgment that nobody wishes to be embarrassed in public; second, the probability that such a wife misuses her marriage certificate, and such a partner misuses his bank account, to the disadvantage of the weaker party. In these judgments, one tacit assumption is included —the assumption that "normal emotions" apply to *all* people. Via conscious identification, the "normal emotion" is automatically assumed to be operating.

The catch is that the basic assumption is a fallacy. The victim is assumed to react "normally," but what if the husband and the business partner so publicly taken to task are *unconsciously* attuned to defeat, humiliation, self-torture? Assuming that both victims are unconscious adherents to the "pleasure-in-displeasure pattern," are psychic masochists, in short, then the whole picture changes. Perhaps both supposed victims had provoked the situation by making remarks which habitually aroused the wrath of their less cultured opposite numbers. If this is the situation, the pity and commiseration awakened by identification are wasted and the common sense judgment is revealed as a total error. The only real victim, the only sucker, is the sympathetic but naive author of the misjudgment.

The misjudgment is further complicated by the fact that both victims described above do react according to the rules of common sense; they are indignant, and even furious. The fact that psychic masochism is an unconscious structure solves the apparent contradiction. Exactly because the victim of the other person's "meanness" knows nothing of his own inner self, he has to prove to himself and his very knowing unconscious conscience that he is the opposite of what the inner indictment claims he is, a seeker of kicks, humiliation, defeat. Under no circumstances will he be aware that he gets a kick out of being kicked around.

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In analyzing a woman in her early fifties, I came across a peculiar situation: an airtight masochistic system comprising both emotional and business life. This patient was first married to a man thirty years her senior; he was completely impotent. She admired his intellectual superiority, loved him dearly, and made him a comfortable home. After his death, she attached herself to a man six years her junior. She used this insignificant difference in age constantly to stress the impossibility of marriage and the transitory character of the relationship. At first glance, one could suspect that the propelling factor here was a puritanical attitude towards sex. In marriage, she could enjoy mental happiness under the condition of suffering sexual frustration; in her relation with the lover, she enjoyed clandestine sex under the condition of sacrificing respectability. She could achieve pleasure, therefore, only at the cost of renouncing some advantage.

Actually, the whole procedure had little to do with sex proper; it was part and parcel of a broader "life-line"—the masochistic one. This became clear when she described how she had built up in her lover the idea of marrying "a nice girl of his own age." She even promised to choose such a fiancée for him.

Circumstances forced a two-year separation. During this time, the patient was building up a glorious fantasy of a happy reunion. When this became possible, it

turned out that in the meantime the man had attached himself to "an older woman" —a woman of her own age. The patient "suffered hell," but went into a business partnership with the ex-lover!

According to her, the loss of the lover was "inevitable"; what she found disturbing was losing him to a woman of her own age. In reality, she had misjudged the man completely; he was not interested in the ages of the women he attached himself to, but in their "kicking ability." My patient had treated her lover with consistent kindness and consideration; his subsequent actions proved that he had really wanted exactly the opposite treatment. This he got; his new inamorata was an aggressive, scheming gold-digger. This, of course, clarified the inner structure of the man as severely masochistic.

Constant conflicts between my patient and the new inamorata followed, with my patient always on the receiving end. For years she tolerated the impossible triangle and continued social relations. She never understood what had hit her and bitterly complained to herself of her ex-lover's "change." She did not know the ABC of masochistic psychology: a psychic masochist is submissive to the stronger, and cruelly aggressive to the weaker person.

The ex-lover treated my patient, in their business relationship, with scenes, contempt and temper tantrums. She worked fourteen hours a day, while he spent his time talking big and complaining about the way *she* wasted time. When even this epitome of masochism started a miniature rebellion, he squelched it quickly by pretending he suffered a heart attack.

Finally, the man decided that because of changed business conditions it would be more advantageous to liquidate than to continue their venture. His procedure was quite cunning; probably the strategy was supplied by his wife. His scenes and reproaches were stepped up; he actively sabotaged operations. He persistently pointed out that if my patient's friends would lend her the money, she could buy him out. He simply saw that business was on the down grade, wanted to avoid further responsibility, and retire with his capital.

My patient started to capitalize on the sympathy of her friends; she was near a "nervous breakdown." She claimed that her happiness could be restored if she had the money to buy her partner out. Friends declared themselves willing to lend her the money, but pointed out that the business would remain without working capital if she thus freed her partner from his obligations. These arguments were of no avail, and eventually the partner was paid off.

After a short time, her friends' dreary predictions proved correct. The patient had to liquidate her business, and its failure saddled her with fresh debts. Her partner, on the other hand, had rescued a good deal of money by retiring at the right moment.

In the patient's subsequent analysis, it became obvious that what *appeared* to be an attempt to achieve "peace of mind" by getting rid of her troublesome partner-lover was *but the last gift of the masochistic woman:* she rescued *his* capital, lost her own, and became burdened with additional debts. It is superfluous to state that by squandering money in her good years, she had first left herself completely at the financial mercy of her partner, and had subsequently become a burden to her friends.

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One could adduce example after example from marital conflicts; in my books, *Conflict in Marriage* and *Divorce Won't Help* (Harper & Bros.), a compilation can be found. The upshot is that one cannot be too careful in evaluating psychic reactions; common sense and probability of "normal emotions" are a useless yardstick when one is confronted with psychic masochists.

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CORRECTION

In October issue, Vol. XIV, page 308, the degree M.D. appeared after the name of Benjamin Kotkov, author of the article "Group Psychotherapy with Wayward Girls." This was an error. Mr. Kotkov is not a doctor of medicine.

Clinical Conference on Paraplegia

of the
Cincinnati General Hospital
CHARLES D. ARING, M.D., *Editor*

Dr. Arnold M. Meirowsky: I should like to open this conference with the story of three men, all of whom were wounded in action in the Korean War. The first, an American soldier whom I shall identify only as Jimmy. He became a casualty in the late fall of 1950, sustaining a missile wound of the spinal canal at the level of T 12 and L 1 that rendered him paraplegic. The missile had traversed the retroperitoneal space lacerating one kidney. Comminuted bone fragments had compressed and contused, but not transected, the conus medullaris. A minimal degree of motor function was preserved below the level, but there was practically no sensory perception. Bowel and bladder function were impaired. A laminectomy was performed four days later. When we first saw this patient, about two weeks postoperatively, his laminectomy wound had broken down. He had an extradural abscess. His face was ashen gray and he showed evidence of excessive weight loss. There were multiple decubital ulcers. The bladder was grossly infected. I won't go into all the details, but on the 143rd day after having been wounded, he died. He died because of an infection about the spinal cord wound that could not be controlled by antibiotics, because of bladder and kidney infection, because of decubital ulcers and concomitant hypoproteinemia. He died because the sum total of all these complications prohibited early ambulation that could have prevented the formation of a kidney stone. The latter was the ultimate cause of death: a urethral stone had blocked the remaining healthy kidney and he expired in uremia. Actually a vicious cycle of complications was the true cause of death. This soldier had a partial spinal cord lesion many of the effects of which may well have been reversible.

René, a French soldier, is the second of the three men whose stories I want to relate to you. He sustained a gunshot wound shattering the laminae of L 1 and L 2, damaging, but not transecting the cauda equina, and also producing six perforations of the intestinal tract. Laparotomy, colostomy and laminectomy were performed shortly after he had been wounded. He was cared for on a Stryker frame and decubital ulcers were prevented by two-hourly turning, day and night. Whole blood transfusions were used to ward off the drop in hemoglobin and red cells that almost always follows trauma of the spinal cord. His paralyzed bladder was treated with Munro's tidal drainage, an acid urine was maintained and the output was not allowed to drop below 2000 cubic centimeter in any 24 hour period. Six weeks after having been wounded, he was flown back to France. At that time he was about in a wheel chair and was in good general physical condition. He had regained some motor and sensory function in his legs, but not enough to allow him to walk on his own power. I did not hear from this boy for over a year when I was notified by French authorities in Japan that he had volunteered to return to Korea for another tour of duty there with the French Batallion. I need not tell you that it was a happy experience to have René visit me at the ROKA neurosurgical team with which I was working at the time. He walked without a limp, had no pain and had normal bladder function. The only deficit that I could find was a small area of hypesthesia over the lateral aspect of each thigh. He was a happy lad who did a good job driving an ammunition truck. This man too had a partial lesion, just like Jimmy whose story I have told you.

Finally, there was an Australian soldier who was wounded in action in February 1951, sustaining a missile wound of the spinal canal at the level of T 9. He was operated by one of our mobile neurosurgical teams five hours after having been wounded. At operation, one fourth of the cord had been found transected and the remainder of the cord at that level was severely contused. Bladder

care was initiated immediately and maintained throughout his hospital stay. While in Korea he was turned every two hours between two padded litters, a substitute for the Stryker frame of which I shall speak later in more detail. He was evacuated to Australia about three weeks after having been wounded, without bladder infection, without decubital ulcers and in good general physical condition. We did not expect any functional return, but without any complications whatsoever, this man was ready to start on a physical rehabilitation program at an early date. Through the courtesy of Major General K. Kingsley Norris, the Director General of the Australian Medical Forces, we received follow-up notes on this patient. He has no complications of any sort, does not require a catheter and has started on his vocational training program. Letters which we have received from the patient himself attest to the remarkable progress which he has made in his physical and mental rehabilitation despite the presence of a physiologically complete transection of the cord.

Here then are three stories: one of a man with complete paraplegia. Prevention of complications from the outset and the splendid retraining program which is available to Australian paraplegias in their home country have put this man on the road to full rehabilitation. One is of a man with an incomplete cauda equina lesion who did not develop any complications and who has made a complete recovery. And one is the story of a man with a partial, and potentially reversible lesion, who succumbed to a vicious cycle of complications to which the paraplegia is prone, the only treatment for which is prevention.

Trauma of the spinal cord, or of the cauda equina, may result in complete paraplegia with permanent paralysis below the level of injury. It may result in initially complete paralysis below the level of injury. It may result in initially complete paralysis with gradual return of all or of some function, or it may result in partial paralysis with continued gain of functional return. The prognosis cannot be made prior to surgery and often cannot be made at the time of operation.

Trauma of the spinal cord does not manifest itself solely by the pathological changes which are visible in or about the cord at the site of injury. Such trauma affects the entire physiology of the body. It may interfere with sensation and with motion, with function of bladder, bowels and sexual organs, with the circulatory system, the sweat mechanism and the electrolyte balance. Understanding this, we must realize that the treatment of paraplegia cannot be limited to surgical measures, but must comprise attention to all systems. This we must keep in mind whenever we are confronted with paraplegia or quadriplegia.

The life expectancy of a paraplegic man, in my opinion, is as good as that of anybody, as long as the complications that we have mentioned, are prevented. Their prevention is the essence of the management of paraplegia. Bladder and skin care, prevention of hypoproteinemia, early ambulation, those are the main factors in the achievement of our ultimate goal: rehabilitation.

What then do we do when we first see a man with fresh paraplegia? First of all, as soon as that diagnosis has been established by physical examination, we must do one very simple thing: we must insert a retention catheter into the bladder. Delay in the establishment of bladder drainage will lead to overdistention of the bladder and to permanent damage of musculature and intrinsic nervous mechanism of the bladder wall. Such damage may make the restoration of a reflexly or automatically functioning bladder impossible. The catheter should not be larger than size 16 or 18. Large catheters, by blocking off secretions, may cause epididymitis which is another common complication in the presence of paraplegia.

Time does not permit the discussion of the indications for early surgical intervention by laminectomy, a procedure which in our opinion is always indicated in compound injuries such as one would encounter in active warfare.

Bladder care is maintained by twice daily irrigations with "G" solution (citric acid 32.25 Gm, magnesium oxide 2.92 Gm. and sodium bicarbonate anhydrous 3.84 Gm. per liter of distilled water) or "M" solution (citric acid 32.25 Gm., magnesium oxide 2.92

Gm. and sodium bicarbonate anhydrous 8.84 Gm. per liter of distilled water) twice weekly change of catheter, earliest possible institution of Munro's tidal drainage, an adequate intake and output, and by keeping the pH of the urine at the acid level.

The next thing that requires immediate attention is the skin. Decubital ulcers can develop within a few hours of pressure on any one area. For that reason it is most essential that the paraplegia be turned every two hours, day and night. You might think that just one decubital ulcer is not a very important thing. One ulcer, however, will always lead to more. They become infected and will eat through the soft tissue into the periosteum and into bone. After the last war many of us had the unfortunate experience of seeing many paraplegic men with decubital ulcers that led to osteomyelitis, purulent infection of hip and knee joints, destruction of the sacrum and many other complications. All this always started with just one small decubital ulcer. If you consider the tremendous loss of plasma proteins from an ulcer surface you will readily realize how decubital ulcers lead to hypoproteinemia and, in turn, how such hypoproteinemia will render the patient more prone to the development of new ulcers. It has often been said that the treatment of decubital ulcers lies in their prevention. They can be avoided by turning the patient from the onset of paraplegia, day and night, every two hours. This can best be done on the Stryker or Foster frame. In lieu of a mattress, we prefer to cover the frame with six pillows. In the supine position the knees are maintained in slight flexion and the lowermost pillow reaches just to the ankles so that the feet do not rest on the pillow, preventing pressure on the heels. A padded board is used to maintain the feet at a right angle and to prevent foot drop. A pad is kept between the internal malleoli and between the inner surfaces of the knees. In the prone position the feet are allowed to hang over the free edge of the frame preventing pressure on the toes.

You might say these Stryker and Foster frames are pretty fancy gadgets that would not be available in every hospital in the country. Let me tell you what we did in the field in the Korean War. It was in Hambung in North Korea in November 1950 while we were receiving many casualties during the fighting at the Changjin Reservoir when two ingenious Army Medical Officers, Major C. Goplerud and Captain J. Girardeau first thought of using two padded litters on one of my paraplegic patients. This method was standardized later on. The litter for the prone position is specially prepared with an opening for the face and one for the catheter. Both litters are padded with blankets which are laced underneath the litter. Comes time for turning, the second litter is placed on top of the patient. The two litters are strapped together with the patient sandwitched in between and then turned. The top litter which had been underneath the patient for the preceding two hours can then be removed, aired and dried. Employing this litter-turning method at the Third Neurosurgical Detachment during the period from October 1951 to August 1952, there were NO decubital ulcers in U.S. or U.N. soldiers. The rational employment of Stryker or Foster frames, or of any suitable substitute such as the litter-turning method which I have just described, is one of the most essential factors in the management of paraplegia.

The best part of this conference is yet to come, and I do not want to take any more time. I wished only to discuss some of the basic principles in the early management of paraplegia and to show that it is quite possible to prevent the complications of paraplegia and to facilitate early physical and vocational rehabilitation. I have persuaded an old friend of mine, Mr. Marcus W. Orr, who is in the best position to know, to give his views and reactions in respect to the problem of paraplegia. He has lived with paraplegia for many years and has done a magnificent job of it.

Mr. Marcus Orr: When Dr. Meirowsky invited me here, he suggested that I say anything I thought appropriate and my mind ran into all sorts of ideas. I tried to think of a way to integrate what interests you—which is paraplegia at the moment—and what interests me, which is sociology most of the time now. I didn't succeed, so you needn't worry. The main reason I didn't succeed was that finding myself in such an

atmosphere with all of these clinical looking people, I sort of feel myself in the role of patient again. Frankly, I feel it will be far more comfortable if you ask me questions and I answer to the best of my ability. However, I am sure it would be helpful if you had what we call in sociology a frame of reference. So, I'll say a few things first about rehabilitation in paraplegia as I have seen it.

Recently in Champaign, Illinois, where I am in school I had an experience which reminded me of a story that I had heard about Justice Oliver Wendell Holmes. Some years back when Justice Holmes was on the bench of the United States Supreme Court, it was his custom to take morning walks about the city of Washington. He liked to have company because he enjoyed pleasant conversations as much as he did his morning constitutional. One morning he was accompanied by a colleague, Justice Brandeis, who at that time was around 70 years of age. Justice Holmes was fast approaching a venerable 90. As they rounded a corner a street car stopped and a very attractive young lady alighted. As she stepped onto the street a strong gust of wind whipped up her skirts. Both of these gentlemen had been in deep conversation but Justice Holmes noticed this interesting sight, and he glanced over to his friend hoping to exchange a look, but he found that his friend was gazing down at the sidewalk deep in conversation. Holmes shook his head and sadly said, "Ah, to be 70 again!"

Well, back to paraplegia and rehabilitation. When I came to Champaign I was 30 years old and most of the students there in wheelchairs—the people with whom I was thrown in immediate contact—were younger. The difference in age seemed greater to them than it did to me, but one night one of these boys asked me to join him at dinner. As we were going along the sidewalk, we had driven downtown in his car, we came to a crossing and had to go down one curb and cross the street and up another curb in our wheelchairs. Well, I had been taught by the Army to always look for a nice man to stop and back us off the curb and help us up the other one, so I began looking. The first thing I knew, my 19-year-old friend was up on his back wheels and had bounced down the curb, was across the street, and had bounced up the other one quite alone and was beckoning me to come, which I didn't do. I waited until I found an elderly man who helped me across the street.

As there have been changes in the medical handling of paraplegia, as Dr. Meirowsky has told you, there have also been changes in attitudes of patients toward rehabilitation. With the little encouragement they have had there has been a remarkable change in attitude. This has undoubtedly been helped by the impetus given rehabilitation by the Army and the Veterans' Administration program. These programs were beautifully organized originally, excellently planned, and staffed by most efficient people. Unfortunately they seem to have degenerated, at least as far as the Veterans' Administration centers with which I am concerned, much to the consternation of those of us who have paraplegia and are dependent upon them, those of us who are interested in paraplegia as a progressive thing.

One thing we have tried to do to combat this degeneration has been to organize a National Paraplegia Foundation, but this has not been too efficient. However, it is about the only idea that our frame of rerence allows us to bring forth. The Foundation was organized by a group of veterans who received rehabilitation. We raised some money and sponsored fellowships mostly in research because we haven't had sufficient funds to provide care. We have an excellent medical advisory council and we hope that this idea will grow, but it really dwells in obscurity and much must be done to prepare the public and profession for it. Some things are being done, however. In Chattanooga, Tennessee, Dr. Augustus McCravey, the neurosurgeon, has a group of lay people interested; also some veterans with paraplegia are helping him to organize a rehabilitation center. Recently I heard that they rented a building in downtown Chattanooga and have some 35 patients in that immediate area who come there every day for physical therapy and who are being taught trades which they can manage in their chairs.

Then, here is the point where I think I can bring sociology into juxtaposition with paraplegia. A few years ago I had a job

doing a sociological survey for Indiana University. We were interested in seeing just what rehabilitation had amounted to thus far in paraplegia, and what had been accomplished by the treatment and the techniques that the Army and the Veterans' Administration have applied to these men, what happened to them since they have been home, what are they doing, are they alive, are they functioning? We had a great collection of Army and V.A. records; we went through these and found a group of 100 cases lying roughly in the Mississippi Valley, from New Orleans to Duluth and as far east as Cleveland and as far west as Austin, Texas.

I interviewed these patients one summer. It was a 5000 mile jaunt and very interesting. There was one man in Cleveland who was working in a garage in the rear of his house. A sign said that he was a repairman and my records said that he had been a repairman before he was injured. So I rode back to this building and I saw an empty wheelchair in a corner, and under a car which was up on posts was a creeper and some rather lifeless looking legs hanging off that creeper. I called and this man came sliding out from under the car and crawled up into his wheelchair and shook hands with me. We talked and he filled out a form which I had. Then I asked him what had made him take this job. He had been climbing up on a fender, and fixing a carburetor, and he had a dolly and was hammering out dents in that fender; he was all over this automobile just like a monkey. He was a little upset since I had all this data on his background, that I couldn't put two and two together and determine that this was all he knew. This is what he had done before and this is what he was doing now. Rehabilitation was a fact. And so I was led into feeling that perhaps rehabilitation is rehabilitation. I had been taught that as far as paraplegia is concerned, rehabilitation is a bad word. The word should be habilitation. But more and more I came to feel after seeing such cases that it was quite possible for most of these people to return to the work which they had done before, depending, of course, upon the type of treatment and encouragement they received.

We didn't find all cases so encouraging or so complete or so planned. In Columbus, Mississippi, we found decubital ulcers. In Minneapolis we found addiction and in many other places we found other untoward things in varying degrees. Generally, however, it was a good picture because most of the men who had left the hospital, who had gone home, had been fortunate enough to approach their care predisposed to getting well. As good as the program in the Army and Veterans' Administration was, I think one of the weaknesses of it is now coming out. It was not thoroughly objective. A patient was not treated as a person. The thing, paraplegia, was fragmented to become a system of ills, there was very little if any psychological care. We had seen clinical psychologists who made reports, but there was no such thing as counselling or guidance or anything of that nature. This is something which certainly cannot be overlooked in so generally serious a problem. As far as that little tour is concerned which we call "Paraplegia Odyssey," there was something of merit in it. As far as the National Paraplegia Foundation is concerned, I could speak for a long time, but I'd much rather have you ask me questions. Is there anything you would like to ask me either personally, or about these programs in which we have been?

Dr. Charles D. Aring: I wonder in retrospect, Mr. Orr, if you might tell us something about your criticism of medical handling.

Mr. Orr: Well, I chuckled when Dr. Meirowsky said the man on a Stryker frame is comfortable; he can read a book and keep himself occupied.

Dr. Meirowsky: I must admit all of them have complained to me of not being comfortable, and I've succeeded, usually in 50 per cent at least, in talking them into being comfortable. These men wanted only intelligent explanation to feel better. I should not have used the word comfortable, I should have said that we must orient the man to his injury. We told the paraplegic patients as soon as we saw them, in North Korea, what their problem was, prior to operation. We explained what we were trying to do and that we might not restore any function in their legs. We answered their questions

such as about using these litters that aren't very comfortable; that's the best way I know to try to make them comfortable. Then after operation, right then and there, we explained to the men in whom we found a transection of the cord that they would not regain the use of their legs. We also explained to them what they could regain and what could be done if the program was followed. I believe that policy has paid off to some extent. I believe that there has been a great advantage in orienting people. I'd like to hear from you how you feel about orienting these men right from the beginning.

Mr. Orr: One of the main things that disturbed me when I came back from Europe and was brought to Kennedy Hospital—and I think things which disturbed all of us—was that at that time there was no intelligent approach to a problem such as paraplegia from the patient's standpoint. They were confronted with 350 of these patients at that time in this one center and were of course hampered with all sorts of handicaps. I was never told what I could expect until about a month after I had arrived there and someone decided we should see a psychiatrist. Our group comprised some 75 men on a ward, and *the* psychiatrist. I say *the* psychiatrist because we saw other psychiatrists who were different, but this man came in and told all of us that unless we conformed to certain norms of response that in five years we would no longer be among the living. In other words he said that the life expectancy of a paraplegia is now five years. He continued, "We are working on a plan of treatment and if you cooperate perhaps we can extend these five years to a few more." Needless to say, this was a bit frightening, especially when very few of us knew what was wrong with us. However, this was soon adjusted; the psychiatrist disappeared.

The most serious objection I could have to the care I had was that it took me two years to get it. I have a lesion of the 5th dorsal segment. I didn't have many bedsores. I had a couple on my ankle, but fortunately I was well endowed by nature with padding. It took me two years to go through routines which can now be accomplished in 8 or 9 months, so that most of us fell by the wayside. I blame this on a lack of objectivity in the program which at the time wasn't quite possible with what was known.

Dr. Joseph P. Evans: I wonder whether it wouldn't be worthwhile to say a word about the changed outlook in paraplegia brought about during the last war; before the last war, five years was a good outlook for a paraplegic. At the end of the World War II, Colonel E. Harry Botterell who then was chief of the No. 1 Canadian Neurological Hospital came to Cincinnati to talk before the Academy of Medicine. Dr. Botterell had been the medical sparkplug of the Canadian effort—simultaneously similar progress was being made in the American Army to be sure—but I think he was among the first to realize the potentialities of proper care. Paraplegics from the hospital at Basingstoke were sent back to the Christie Street Hospital in Toronto and there, as soon as Dr. Botterell got back, he organized a program with the help of Connie Smythe of the Toronto Mapleleafs, the hockey team. There was a happy wedding of medical understanding and of financial resources. Very soon the Christie Street program was developed to the point where they opened the Maplehurst Lodge which was a convalescent home providing facilities for occupational therapy as well as rehabilitation. Efforts were made to provide these men with opportunities for getting out and making the normal social contacts they should make. They were helped very considerably by Dr. Albin T. Jousse. He was incorporated into this program, and it was he really who carried it on at Christie Street and the Lodge. It was largely the driving spirit of Dr. Botterell which made it possible to get that program going. Here we have witnessed the same driving spirit tackling the situation in Korea. It takes initiative and drive on the part of the medical staff to follow through, and then the rest is pretty much up to the patient. As pointed out, if there is a sound psychological approval and given all the facilities, if the patient has the will, he will go ahead.

Dr. Daniel Osher: I wonder if I could ask Dr. Meirowsky briefly to sketch the course of a patient from the time of injury through rehabilitation.

Dr. Meirowsky: Well, of course, progress depends to some extent upon the lesion involved. Let us take the average man who sustains a missile wound of the spinal canal and of the spinal cord. He is taken by helicopter directly from the Battalion Aid Station to a Mobile Neurosurgical Team. There he is operated on without delay and receives all the supportive measures that we have discussed. His bladder is properly cared for and he is turned continuously between padded litters every two hours, day and night. The entire treatment is directed toward the prevention of bladder infection, the prevention of decubital ulcers, of hypoproteinemia and of all the other complications that are bound to occur otherwise. After four to seven days he is flown to the Neurosurgical Center in the Zone of Communications. Admission to an intermediate hospital along the line of evacuation is avoided, for it has been shown that only one day without specialized care will produce decubital ulcers or bladder infection. Leave a man without such care for two or three days during the early phase of paraplegia, and he will develop all the complications that may cost him months of trouble or as many years as Mr. Orr had to spend until he reached the point at which he is now.

At the Center in Tokyo, tidal drainage is instituted, supportive measures given such as supplementary diets, physiotherapy and ambulation. From Tokyo paraplegic casualties are flown to the West Coast. They are cared for on Stryker frames aboard the plane and by specially trained MATS nurses and corpsmen. Thanks to the untiring efforts of our young neurosurgeons in the field, of our neurosurgical nurses and enlisted technicians, and thanks to the help from the gallant helicopter pilots and from the MATS personnel, for one whole year, beginning in October 1951, there have been no decubital ulcers in US and UN patients from the Battalion Aid Station at the front lines in Korea to the West Coast of the United States.

In the Zone of Interior, casualties with paraplegia are taken to one of the Army's Neurosurgical Centers and from there to a Paraplegia Center in the Veterans' Administration. Though these Veterans' Centers were organized splendidly in the early postwar years, and still have excellent physical facilities, the Veterans' Administration program in behalf of paraplegia is in the process of breaking down.

Spasticity is one of those late complications that does occur in a certain percentage of paraplegic people. Mild spasticity, I think, is an advantage rather than an impediment. It actually facilitates ambulation, getting in and out of a car and other such activities. Mr. Orr might have something to say about that. However, progressive spasticity, sufficiently severe to interfere with ambulation, must be relieved. It may lead to ankylosis of joints, formation of kidney stones and cachexia. The treatment of choice for those cases is anterior rhizotomy from T12 to S1 which was first described by Munro of Boston.

Pain also may present a serious problem. I cannot warn strongly enough against the routine use of sedatives and analgesics. All of them are habit forming and nobody, certainly not a man who is burdened with paraplegia, will have sufficient will power to fight off addiction which is bound to develop from the routine use of narcotics.

There are essentially two types of pain in the presence of paraplegia. One is burning pain that occurs in virtually every paraplegia. It is usually intermittent and varies in degree. Ambulation and activity helps considerably in combating this burning pain. I should like for Mr. Orr to comment on this point also. The other is intractable root pain, usually seen in cauda equina lesions. Such root pain is extremely severe and intolerable. In many instances it will require a lateral spinothalamic tractotomy to relieve it.

In summing up, the prevention of early complications should make it possible for the average man with a spinal cord injury to start his physical retraining within six weeks. His adjustment will depend largely on his insight into his problem and on the guidance which he may receive from his doctors. It will also depend on what kind of a man he is. Surely, there are people who have never amounted to anything and who never will. They will live off their pension or off relatives. Then there are others,

and I should like to think that those are in the vast majority, who will go out and build a new life for themselves and who will make good. The magnificent achievements of so many of our World War II paraplegic veterans are proof of that.

I had very severe spasticity from about 60 days after injury, and I had an anterior rhizotomy about one year after I was injured. It didn't leave me completely flaccid, a thing for which I am grateful, because it does, as Dr. Meirowsky has told you, help a great deal when I begin to jump from the chair into the car. The spasm sort of helps me carry a little further. It works like a spring. Then as far as pain is concerned, I have burning pain which at times becomes very severe. It has bothered me a lot since I have been in a period of concentrated study, and with most of the patients this is a common experience. It is more severe at night when there is no activity. They notice it at quiet times and also when one has to concentrate and be in a rigid position for a long time. I find it in my feet and all up and down my legs, in the crotch, and a little in the back. Now I have a relatively high lesion (D5). I'm 6 feet 4 inches tall and I weigh about 210 lbs. I'm not sitting up straight, when I do I'm extended. So, every day I have some long-legged braces which I strap on and which lock at the knee, and I stand up at parallel bars and ambulate for about 100 yards. It takes me an hour and I do it a bit lazily, but it's an extremely pleasant feeling because it relieves this burning sensation.

Now as far as bowel retraining is concerned, many people have more or less automatic function which enables them to have an automatic clearance daily. At first we were all given enemas and were taught to take them to ourselves. As far as I am concerned I have to have an enema once a week. I have some degree of automaticity, but because of the spasm the sphincter is tightly closed and I have to use a rubber glove and my hand to open it in order to empty the bowel. Most of us were taught how it should be done, so that is no longer a problem. I have a reflexly functioning bladder. I do not use a catheter and have no residual urine. Perhaps due to several resections of the bladder neck I am incontinent and therefore I use a rubber sheath over the penis which leads into a covered bottle fixed beneath the seat of the wheelchair.

In connection with physical retaining, there are complicated plans in V.A. Hospitals. The ideal situation is that propounded by Munro of Boston. The Munro Doctrine is that a paraplegia should be completely ambulatory. This was a great bone of contention when I began retraining. I was told that I should walk despite paraplegia which I didn't quite comprehend. I had a friend who had been a paraplegia for some 16 years and she walked everywhere. She was a product of Munro's treatment. However, most of us found that it is impractical. After walking 100 yards on braces or crutches you are completely worn out, especially if you're as large as I am and have as high a lesion. If you have no spasms it is a bit easier; if you have spasms you have to have someone standing by in case you fall over. So, most of us confine our ambulatory activity to short daily walks and some even less often. The exercise is usually done on the parallel bars; most of the men who have houses, build these things right into the house. As far as other retraining is concerned, at our rehabilitation center at Kennedy Veterans Hospital, we had bathtubs, we had curbs with signal lights, gravel walks, all sorts of things which were used for crutch walking. We used the tripod gait in braces which were hooked together with a bar, so that your feet are held rigidly together and then you have a triangular walk. Put two crutches forward and with you as the third crutch, you swing through.

Mr. Richard Selzer (student): When you were at home, what did you do about turning at night?

Mr. Orr: In the hospital early in my course, I was turned every two hours by attendants; this continued for about 6 months. After that I was told it was no longer necessary that I be turned so often and that I should turn whenever I woke up. Most of us then in the hospital had Balkan frames. You could reach up to a monkey bar and

turn yourself, and you became accustomed to using a mattress or whatever you might grab hold of. Many of the people slept entirely on their stomachs with a pillow under their ankles. But I sleep all night without moving now, and have for some five years and have no difficulty. I think you'll find this is generally so, though some people prefer to turn as a safeguard.

Student: Mr. Orr, I was wondering what factor in your earliest period of treatment meant the most to you.

Mr. Orr: Frankly I feel the rhizotomy. When I had the severe spasm I could not sit in the chair, my legs would not stay in bed. I had to be tied in bed by ropes of sheets, and it was the most miserable thing I have ever gone through. There was no object in getting out of bed and it was impossible to stay in. So the rhizotomy was quite helpful. It is a terrifically tiring thing to have these spasms. I lost weight. At one time I weighed 140 pounds during this period (down from 210 pounds).

Breaking the umbilical cord which is established with the hospital is difficult. There should be some goal when this point is reached. In most cases this has been imperfectly defined. For instance in one general hospital right now, 5 men have been told by the administrators that they must leave. They have been there 7 years. They were told that this is a hospital and not a soldier's home. None have received maximum benefits; they have not been prepared for life outside a hospital.

Dr. Meirowsky: Mr. Orr hasn't told you, but I will take the liberty of mentioning that he makes his own home in a hotel apartment, takes care of himself without any help, goes to school, and manages to be quite active socially.

Mr. Orr: Something more should be said on this score. I have an income of $400 per month compensation which is called total disability. This makes things a lot easier. Let's face it.

There is a program which the University of Illinois has set up, a program which is the epitome of this bridge. Most of the people in this group are 17, 18, or 19 years of age; most of them are paraplegic. They have access to parallel bars, pipes in bathrooms have been covered. They have a gymnasium. All the buildings on the campus have been ramped. Some have cars. After one class, I pick up a girl who leaves another class. So there is a cooperative spirit. The whole thing is attacked as a stage of rehabilitation and this program is having results.

Dr. Evans: There were some plans to form a paraplegic village.

Mr. Orr: That was an idea that died aborning. The whole village was to be used as a rehabilitation center. That was repulsive to us. Even on the paraplegia ward there was the inevitable questions, "Who is he? Who am I?" Frequently we had nothing in common except the paraplegia.

Dr. Aring: As I listened to this discussion knowing that it would be my function to sum up, I was heartened by the unfolding of the story of the modern handling of paraplegia, as it was developed by Mr. Orr and Dr. Meirowsky. Surely, I thought as they went along, they will omit one or another aspect of this complex problem, but I think we must agree that between them they have touched all the bases; and there remains little for me to say.

I have sensed a new spirit abroad in the land, with a surgeon implying that perhaps the main aspect of a medical problem is the human being himself. You are aware that the discussion today may as well have been applied to other chronic conditions. These patients, as any of the rest of us, bring to their illnesses all that they have been before. It is therefore imperative in any case to know what sort of a person it is that you are dealing with, as well as the setting of the accident or the disease process. This information must be vital in rehabilitation, since to sense the future one must know the past. While to be sure a certain program has to be followed, if it is to succeed generally, it must be flexible enough to allow for the individual equation .

Casting about among the pearls strewn before us I come up with Mr. Orr's final point; that while persons may be drawn together by their troubles, paraplegia is not

necessarily a constructive basis for social intercourse. To this I would say a hearty "amen," and add that the same sentiments apply to many things; paraplegia should no more be made the basis for people living together than should say an M.D. degree. "I will buy with you, sell with you, talk with you, walk with you and so following," said Shylock; "but I will not eat with you, drink with you, nor pray with you."

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